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To: [redacted] CONFIDENTIAL 7/18/61 25X1

From: [redacted]

Report on 5 VO-1750 and 10 VO-500 Batteries returned by Davenco.

Five of the VO-1750's and two of the VO-500 batteries were opened and examined. The five VO-1750's all indicated ground with ground currents ranging from .3 MA to 10 amperes. All batteries opened showed one or more cells leaking. All except one showed one or more burned intercell straps. No reversals were noted, but the ground conditions could and probably would eventually cause them and this would lead to rupture. The interior sleeves Drawing B2978 for these batteries were actually only 2-3/4" long instead of the specified 3.15 inches. All ground paths were over this short length and in one, the end cell made direct metallic contact with the can. This could not have occured had the sleeve been the proper length. Most of the batteries showed a black, greasy deposit at several points between cells. This black deposit seems to be from the sealing compound which has been heated and possibly modified by the electrolyte. One of the VO-500's opened was grounded and showed one cell definitely leaking. Three of the straps were discolored by heat and three cells indicated reversals. The other VO-500 opened had no ground and was returned only because of a broken tab. However, there had been very slight leakage in that a very light dusting of carbonate powder was noted throughout the battery.

Conclusions: I believe that most of the leaking was caused from overheat by short circuiting and thus damaging the seals. I could not successfully discolor the leads in the laboratory by shorting small groups of one or two cells even when partially charged. I did, however, discolor one strap in a VO-500 battery by short circuiting the entire battery when in a fully charged state. I believe that these batteries have been shorted by the customer or in some mishandling after complete assembly. I believe that most of the leaks were due to this shorting and that the ground reversals and ruptures complained of by the customer were the end result of this treatment.

Some value of ground voltage will often be noticed with these batteries due to humidity conditions rather than leaking cells. I believe that, in general if a ground is detected by means of a voltmeter, the value of this ground should then be checked with an ammeter. If the current passing through the ammeter from either terminal to the steel case is less than 1/2 MA, this will probably mean that the ground indication is simply due to humidity rather than to cell leakage. Values at current higher than this must be watched with caution and if the value is a few milliamps, the battery should be considered not usable.

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